

Fun Bugs Activity

STANDARD: 3200 - 04

Students will understand reproduction and heredity of organisms.

Objective: 3200-0401

Compare and contrast sexual and asexual reproduction.

Distinguish between meiosis and mitosis.

Objective: 3200-0402

Recognize and explain how certain traits are passed from parents to offspring.

Intended Learning Outcomes

- 1.a. Make observations and measurements.
- 2.g. Construct models and simulations to describe and explain natural phenomena.

Background

Students should have a basic understanding of chromosomes and genes. As part of the activity, genotype and phenotype can either be taught or reviewed. This activity will teach meiosis, mitosis, sexual and asexual reproduction.

Safety Concerns: If students are allowed to eat the bug, tell them to make sure that they take out the toothpicks, brads and nails before eating the parts of the bug. One copy of the [Fun Bug Traits worksheet](#) for each student.

Materials:

4 paper "[chromosomes](#)" for each student, and a supply of large and small-colored marshmallows, small nails, chocolate chips, brass brads as needed by the students to make one fun bug for each student and one fun bug for each of pair of students

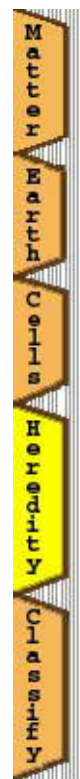
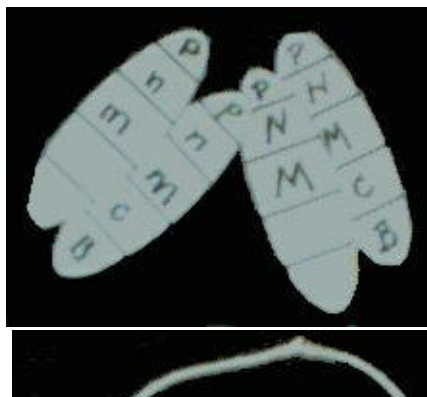
Procedure:

1. Give students two paper chromosomes. Have them write some combination of dominant and recessive genes, one gene on each of the chromosomes to make either heterozygous or homozygous for each of the five traits. The choices for letters are any combination of N,n; B,b; C,c; M,m; and P,p.



2. Using the two created chromosomes, fill in the columns of the Fun Bug Worksheet. The materials list on the worksheet will indicate how many of each of the supplies are needed to create the fun bug. Get the supplies and make the Fun Bug. This is one of the possibilities for what it may look like.

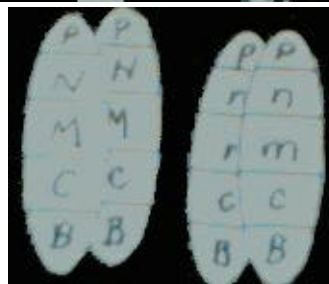
3. Using the two chromosomes, model mitosis by duplicating each of the original chromosomes on the two blank chromosomes.



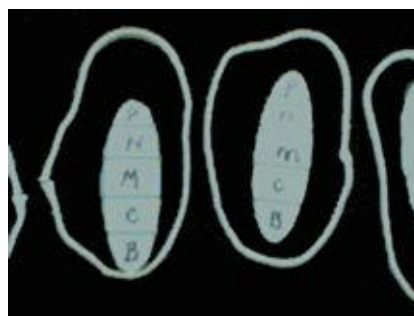
4. Line up the doubled chromosome and split the chromatids apart. These now become two cells, one new one with the same genetic information as the parent cell. Compared to your original Fun Bug, what would the Fun Bug, you created from the new cell, look like? What is the disadvantage of this kind of reproduction (Asexual Reproduction)? What is one advantage of this kind of reproduction?



5. Now model meiosis, by starting with the original two chromosomes. Duplicate the chromosomes again, by placing the second chromosomes next to the original. Then place the doubled chromosome pairs side-by-side. Separate these to form cells with two chromosomes each.



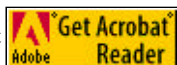
6. Split the doubled chromosomes into cells containing one chromatid each. This makes four haploid cells, four cells each with one half of the genetic information. Could these cells each form a new Fun Bug that would live? No. So take one haploid cell and find another haploid cell to join with to make a new cell with complete genetic information.



7. Using the new information from the sexual reproduction of the new cell. Fill in the columns of the [Fun Bug Worksheet](#). The list of materials will indicate how many of each of the supplies is needed to create the fun bug. Get the supplies and make the new Fun Bug.
8. Use your parent Fun Bugs and compare it to the daughter Fun Bug. Is the daughter Fun Bug exactly like the parents? What is an advantage of sexual reproduction? What is a disadvantage of sexual reproduction?
9. Take out the toothpicks, brads, and nails and eat the eatable parts of the bugs. Clean up.



[Print this page](#) in Adobe Acrobat Format



Visit the [Utah State 7th Grade Integrated Science Core Curriculum Page](#).

Updated October 06, 1998 by: [Glen Westbrook](#)

[Science Home Page](#) | [Curriculum Home Page](#) | [Core Home Page](#) | [USOE Home Page](#)

[Copyright](#) © by the Utah State Office of Education.